KNOWLEDGE MANAGEMENT SYSTEM FOR VEGETABLES FARMERS IN PAHANG

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ABSTRACT

The project is about the system for Pahang Agriculture Department. This system is applying knowledge management technique to manage the data information. This system is developed to help farmers in managing their knowledge. The methodology that had been applied to develop this system is iterative and incremental methodology. This study found that the farmers can share their knowledge even the farmers already retire. This mean, the knowledge from experts can be shared to everyone. The iterative and incremental methodology is flexible and easy to manage more manageable process and better software making and better software structure. This system is available to farmers and all users around the world. By using this system is to make the knowledge about agriculture continuous even the farmers are retired. The farmers also can introduce their product to anyone in the world. Hence, for the farmers that not retired yet, they also can improve their business and also share their experiences and knowledge.

ABSTRAK

Projek ini merupakan sisstem untuk Pejabat Pertanian Pahang. Sistem inin mengaplikasikan teknik pengurusan ilmu untuk menguruskan maklumat. Sistem ini dibangunkan untuk menolong petani dalam menguruskan maklumat. Kaedah yang diaplikasikan untuk membangunkan sistem ini adalah kaedah iteratif dan peningkatan. Kajian mendapati, petani boleh berkongsi maklimat walaupun sudah bersara. Ini bermakna, ilmu dari pakar boleh dikongsi kepada semua orang. KAedah yang digunakan ialah mudah dan flesibel untuk diuruskan. Sistem ini sesuai untuk petani dan semua pengguna seluruh dunia. Dengan menggunakan sistem ini,ia akan memberi maklumat tentang pertanian dan akan tetap diteruskan walaupun farmer sudah bersara. Petani juga akan mengenalkan hasil mereka kepada seluruh dunia. Tambahan pula, petani yang telah bersara juga boleh menambahbaikan perniagaan mereka dan juga berkongsi maklumat.

Table of Content

List of Figure

List of Table

CHAPTER 1

INTRODCUTION

1.1 Background

Knowledge management system (KMS) is a system which can manage the knowledge by creating, storing, sharing and using that information for the benefit of the people and organization. In addition, it can support creation, transfer, and application of knowledge in organizations [1]. Knowledge management system also consists of the initiatives and systems that sustain and support the storage, dissemination, assessment, application, refinement, and creation of relevant knowledge [2].

For my project, I propose the title Knowledge Management System for Vegetables Farmer in Pahang (K-VEGE). This project actually under the Pahang Agriculture Department located at Indera Mahkota. The Pahang Agriculture Department is under the Minister of Agriculture. This Department of Agriculture handles the farmer from Pahang with many sectors that related to agriculture. I choose the vegetables sector as my project since there are lots of improvements needed. The agriculture sector has many techniques used to plant the crop and to increase the production of good vegetables such as fertigation, hydroponic and field farming techniques.

In addition, Malaysia usually uses fertigation technique is cultivation without soil with the provision of fertilizer through an irrigation system [3]. Mostly, the farmer will replant other corps after plucking the vegetables. For example, after planting chillies, farmers will replant the next crop with other type crops such as cucumber. This mean, the soil in polybags can be reuse and not just wasting it. Fertigation technique also gives consistent nutrient levels for crops. Feeding low levels of nutrition

continuously as opposed to intermittent applications provides improved turf consistency. The benefit of fertigation is it provides enough water for better plant growth because no runoff and given on time using the machine power, included reduced labour, increased fertilizer efficiency and the increased flexibility of fertilizer application [4].

Other than that, this system site is important to help farmer to share their knowledge. The easy registration gives benefit to farmer because as we know, most farmers' still not be exposed to the technology. This system site wants to help anyone who interested in agriculture to learn more before they can do bigger project in fertigation. The farmer will be informed by using announcement menu if there are any activities that farmer can involve. Then, photos will be uploaded in pictures gallery and some story about the activity will be upload in activities gallery. The profile of expert can help user to view where are the place they should go if user want to deal with expertise like professor and person who expert in vegetables.

Nowadays in this modern world, everyone wants high quality of food so user can know the different type of vegetables by viewing that information in this system site. This system site also gives easiness to admin to view the farmer improvement since farmer can update, edit and upload the related news. This system site can be viewed by admin of the Pahang Agriculture Department just to update the latest news.

The importance of organization chart is to show the hierarchy of the Pahang Agriculture Department officer. I want to introduce employees to the public. Those ideas can help farmer to be more knowledgeable.

1.2 Problem Statement

During my research to collect the data from the farmer at Taman Pertanian Fertigasi Pahang, he told that most of chillis' plant had been attacked by virus, disease, and also to the other vegetables. After looking for

manual, he mixed the recommended elements such as potassium (K) to accumulate in the fruit appreciably improving yield and quality [5]. In addition, the manual writing can be misplaced or scattered.

As we know, the benefit knowledge should be share with others. If the farmers want to share their ideas or want to jot down their experience, farmer cannot do anything because the Pahang Agriculture Department do not have specific system site for farmers. The knowledge will stop spreading after the farmer want to retire or pension.

When someone who interested in agriculture, he or she should learn by go to fertigation center and meet the person in charge. This gives hardness to new learners who are far from the agriculture place.

Other than that, with this system site, farmer can easily find anyone who wants to do part time job by plucking the vegetables. If farmer do not pluck on time, the vegetables will damage and farmer would lose. Those are problems that farmers usually faced. The expertise and the retired farmers cannot share their knowledges in the system and only can post it at anywhere in internet, so it becomes unmanageable.

1.3 Objectives

1. Develop a system to help farmer share their experiences.
2. Give facilities to user to useable knowledge about planting the vegetables.
3. To give a place for expertise and retired farmers to share their knowledge in this system.
4. Develop a system to share knowledge about agriculture products with internet's users.
5. To help farmer manage their knowledge in agriculture.

1.4 Project Scope

1.4.1 System Functionality

The system is made up about 22 modules which are:

1. Registration Module-This module is special for beginner like new farmers and admin before they can log in. The system will save farmer's profile in the system's database.

2. Login Module-This module allows user to log in to their account after register. Target users who can log in are farmers and admin.

3. Farmer Module -This module is only for farmer under Pahang Agriculture Department. They need to register as farmer before they can login to upload, edit or delete the data that related to agriculture.

4. Admin Module-This module let the admin login and views the system.

5. User Module -This module is about the users who are internet user and want to buy the vegetables direct from farmers. Once users do dealing with farmers about business.

6. Expertise Module -This module is the module for the expertise in the vegetables sector. They can send and reply message to answer the questionnaire.

7. Vegetables Module -This module is to group the vegetable detail in the system. The users can easily find the details about vegetables.

8. Marketing Module -This module come up to help farmer to sell their product to others place. The farmers also can deal with customer about price of vegetables.

9. Farmer Profile Module -This module includes the data about farmer. This module can be filled by admin or farmers themselves.

10. Success Story Module -This module is uploaded by farmers to let farmers share their story of succeeded before they can have many plant and big site to do fertigation.

11. Expert Profile Module -This module is related to expertise like Pahang Agriculture Department, MARDI, and Minister of Agriculture Malaysia to introduce them to others.

12. Organization Chart Module -This module is about the organization chart of Pahang Agriculture Department. This module is included because to introduce the Pahang Agriculture Department over the world.

13. Supply Module -This module is about the fertilizer elements or important elements such as Ferum, Zinc, Phosphorus and others. The farmers will mix the elements to make perfect fertilizer for vegetables. In this module, the farmers can share the elements that suitable for vegetables.

14. Vegetables Profile Module -This module is about to introduce what is the vegetables that suitable to be plant in fertigation techniques.

15. Vegetables Pricing Module -This module is wanted to help farmer to sell their product to buyer.

16. Vegetables Quality Module -This module is to show the quality of vegetables from the fertigation techniques differ to normal fertigation.

17. Planting Vegetables Process Module - This module can be added by farmers because they can upload the process of planting the vegetables and also can be the technique to take care of fertigation vegetables.

18. Risk and Type of Vegetables Module - This module is to story about the risk that farmers faced before can collect the vegetables with the specific type of vegetables.

19. Picture and Activity Gallery Module - This module is all about related pictures and activity about fertigation or any related program and also special moment that had been captured can be uploaded by farmers and administrators.

20. Forum Module - This module can help farmers interact with each other to change some ideas.

21. Announcement and News Module - This module is come up to let farmers and user about latest news that happen in agriculture.

22. Questionnaires and Part Time Job Module - This module can help user because once question is asked, those question will be answered by someone who expert. For those who want to add side income, they can contact farmer.

1.4.2 Target User

1. Admin - Persons in charge from Pahang Agriculture Department that monitor the system.

2. Farmer - Farmer can upload, update, edit, delete, save, reply message and send message in the system.

3. Internet User - Anyone can access the system site by searching at searching engine.

4. Expertise – The expertise like professor or researcher. The expertise can reply and send message in the system to answer the questionnaires.

1.4.3 Software

Adobe Dreamweaver Software will be used to design the interface and implement coding. PHP language and MYSQL database will be used to develop the system. Xampp will be used for database storage. System browser needed to display the system site.

1.4.4 Hardware

A personal laptop and computer needed which is connected to internet is needed during access to this system.

1.5 Thesis Organization

Chapter 1: Introduction

The purpose of this chapter is to introduce to the readers about the project that will be developed later. This chapter contains introductions, problems statement, objective and scope of the thesis organization.

Chapter 2: Literature Review

This chapter explains about the reviews for the chosen project. This chapter is divided into two sub review that require student to study to get complete information about the project. The first part is about the research on the existing system and second part is about techniques and technologies that are related to this project.

Chapter 3: Methodology

The purpose of this chapter is to discuss the approach and overall framework about the development of the project. Method, techniques or technologies that will be and will be used while designing and implementing the project will be included in the content. Justification and method on approach used, software and hardware necessary is stated here.

Chapter 4: Implementation

This chapter acts to document all processes that involve in the development of the project. Designed project development is explained here. The content of this project depends on the system. This chapter also exhibit the interfaces developed for user either the interfaces are developed by using Dreamweaver tools or source code. It contains information of database and tools used. Data in database is shown in this chapter.

Chapter 5: Results, Conclusion and Discussion

The purpose of this system is to explain about the results and data analysis that had been acquired. Result analysis, project limitation and suggestion and project enhancement are content for this chapter.

CHAPTER 2

LITERATURE REVIEW

There are many steps to collect the data and information in literature review for this project such as interview, book, journal and internet. This chapter will be discussed about overview of the manual system, study on the development tools and database management system. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as the justification for future research.

2.1 Introduction

This chapter briefly describes the review on existing techniques related with 'Knowledge Management System for Vegetables' Farmer in Pahang' that will be developed later. This chapter comprises two sections. The first section describes the comprehensive review on existing related systems. The second section describes the review on method, equipment, and technology previously used in the same domain.

In this literature review, the existing system will be collect to be compared with my new system and the new system will take the advantages from the existing system to make new system become more effective and less error.

2.2 Existing Systems Review

Existing system will acts as a references and a guideline to design the Knowledge Management System Portal for Vegetables. Advantages and disadvantages of existing system will be studied to propose a better system and make it friendly used.

According to The Macquarie Dictionary, a vegetable is any plant whose fruit, seeds, leaves, stems, roots or tubers are used for food. Fruit is the edible part of a plant that develops from a flower. [66]

Farming already occurs since the human exist on the world to survive. Over 80 percent of mankind's diet is provided by the seeds of less than a dozen plant species. Over the years man has invented new machines and techniques to increase the amount and variety of crop production. The following will be an overview of the history of farming. [7] The major historical cultures, the development of the tractor, and the major types of agriculture are already practiced today.

Many of the fruits and vegetables written about on this page have grown in the wild for thousands of years. When people began to eat them as food they simply gathered the wild fruits and vegetables. Then, about 11,000 years ago people began to plant fruit and vegetables, to farm the plants and to care for them. The farmers experimented and grew new kinds of the wild fruits and vegetables. Fruits and vegetables found growing in one part of the world were taken by explorers and traders to many other parts of the world. The fruits and vegetables were then planted and grown in many countries around the world. For example, it is believed that Christopher Columbus took pineapples to Spain from South America in the 1400s. [8]

Exchange of seed and knowledge between the common man and woman maintaining vegetable garden and gardeners of vegetable gardens of castles, mansions, monasteries, abbeys and hospitals and vice versa is described.[9] This mean, the exchanges of the seed between the human who have garden can make the vegetables more spread and spread.

The management of the vegetables had been done manually in many years and there still no specific webpage for farmer to share their ideas and knowledge about the agriculture. The increasing of internet technology had

lead to other big changes and progresses to spread farmers business and ideas to all users through internet.

2.2.1 Vegetable MD Online

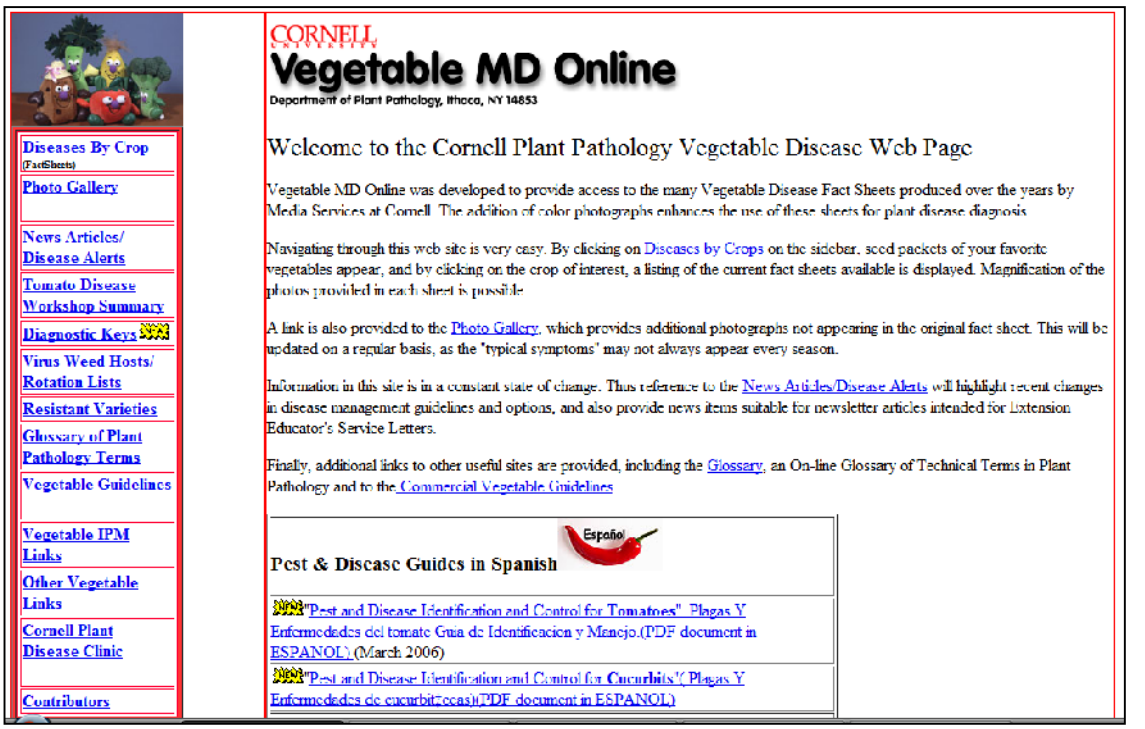


Figure 2.1: Main Page of Vegetables MD Online

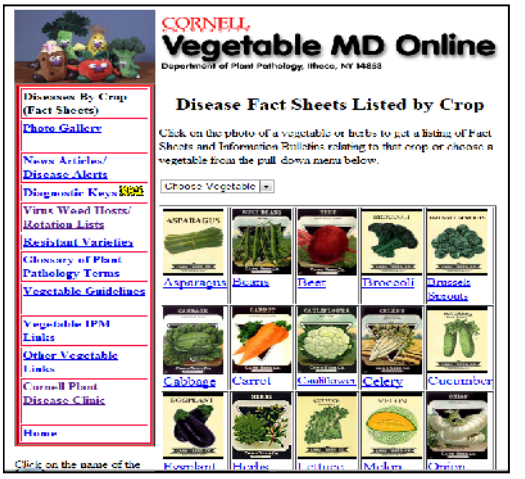


Figure 2.2: Disease Fact Sheets Listed by Crop

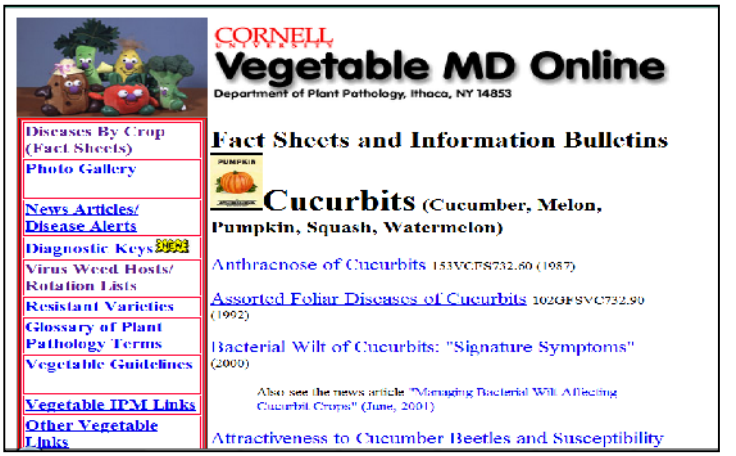
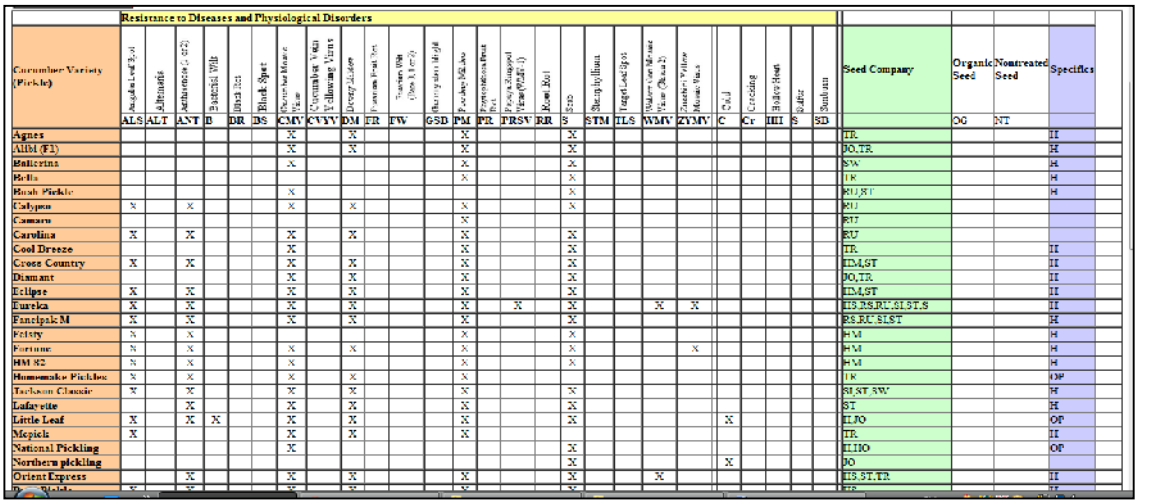


Figure 2.3: Fact Sheets and Information Bulletins

Figure 2.4: Cucumber, Pickles: Disease Resistance Table

From the same page Cucumber, Pickles: Disease Resistance Table, this table explains how to treat the vegetables.



Cucumber Variety (Pickle)	Resistance to Diseases and Physiological Disorders																								Seed Company	Organic Seed	Nontreated Seed	Specifics
	Angular Leaf Spot	Alternaria	Anthracnose (race 2)	Bacterial Wilt	Black Rot	Black Spot	Cucumber Mosaic Virus	Cucumber Vein Yellowing Virus	Downy Mildew	Fusarium Fruit Rot	Tomato Spotted Wilt Virus (race 1)	Gummy Stem Blight	Powdery Mildew	Pythium Root Rot	Pythium Soft Rot	Rhizoctonia Root Rot	Scab	Sharp Eyespot	Target Leaf Spot	Watermelon Mosaic Virus (Races 0, 2)	Zucchini Yellow Mosaic Virus	Cold	Cercospora	Hollow Heart	Gummy Stem Blight	Southern Blight			
	ALS	ALT	ANT	B	DR	BS	CMV	CVYV	DM	FR	TW	GSB	PM	PR	PRSV	RR	S	STM	ILS	WMV	ZYMV	C	Cr	HH	S	SD		OG	NT	
Agnes							X		X				X				X										TR			H
Alibi (F1)							X		X				X				X										DO,TR			H
Ballerina							X						X				X										SW			H
Bella													X				X										TR			H
Bush Pickle							X										X										RU,ST			H
Calypso	X		X				X		X				X				X										RU			
Camaro													X														RU			
Carolina	X		X				X		X				X				X										RU			
Cool Breeze							X						X				X										TR			H
Cross Country	X		X				X		X				X				X										ID4,ST			H
Diamant							X		X				X				X										DO,TR			H
Eclipse	X		X				X		X				X				X										ID4,ST			H
Eureka	X		X				X		X				X		X		X			X	X						ID3,RS,RU,SI,ST,S			H
Fanclpak M	X		X				X		X				X				X										RS,RU,SI,ST			H
Fetsty	X		X										X				X										HM			H
Fortune	X		X				X		X				X				X				X						HM			H
HM 82	X		X				X						X				X										HM			H
Homemake Pickles	X		X				X		X				X														TR			OP
Jackson Classic	X		X				X						X				X										SI,ST,SW			H
Lafayette			X				X		X				X				X										ST			H
Little Leaf	X		X	X			X		X				X				X					X					EL,FO			OP
Mepick	X						X		X				X														TR			H
National Pickling							X										X										EL,HO			OP
Northern pickling																	X					X					DO			
Orient Express			X				X		X				X				X			X							EL,ST,TR			H
Pa... Pickle	X		X				X		X				X				X										TR			H

Figure 2.5: The Table of Resistance to Diseases and Physiological Disorders

2.2.2 Gateway to Indian Fruit & Vegetable Exporters

Fruit Cultivation in India is a prominent business sector for exporting merchandise and shipping and thus earning a good amount of international revenue for India. Since its independence India has been trying keep pace with the dazzling prospects of exporting commercial business. India is essentially agrarian and rural, with ample scope for lands for farming and cultivation and it has also helped for the cultivation of a large variety of fruits as well as vegetables. India being a home of wide variety of fruits and vegetables holds a unique position in production figures among other countries. However, the old age implements and tools of the Central Indian administration, is being upgraded every fiscal year, a domain which truly looks towards guaranteed future.[10]

India has been perhaps been renamed as the vegetable and fruit basket in the world, a factor that weighs fascinatingly upon the cultivation of fruits in the country. India serves as the home to various kinds of vegetable as fruits, and holds a vital position in the field of productions of fruits and vegetables amidst different countries of the world. India leads the world in the

production of mango, banana, and acid lime and in productivity of grapes per unit land area.[11]

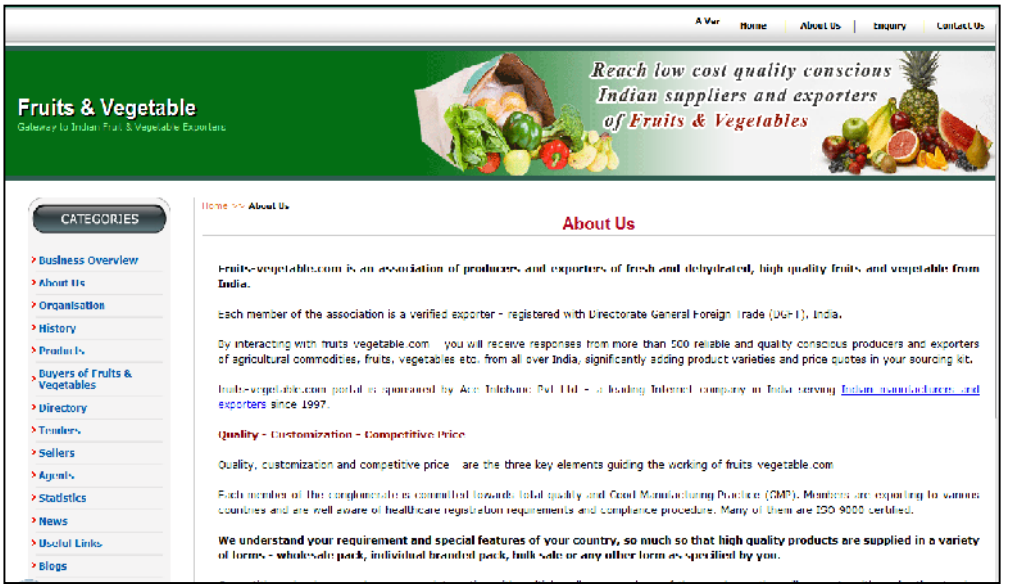


Figure 2.6: About the Fruits & Vegetables

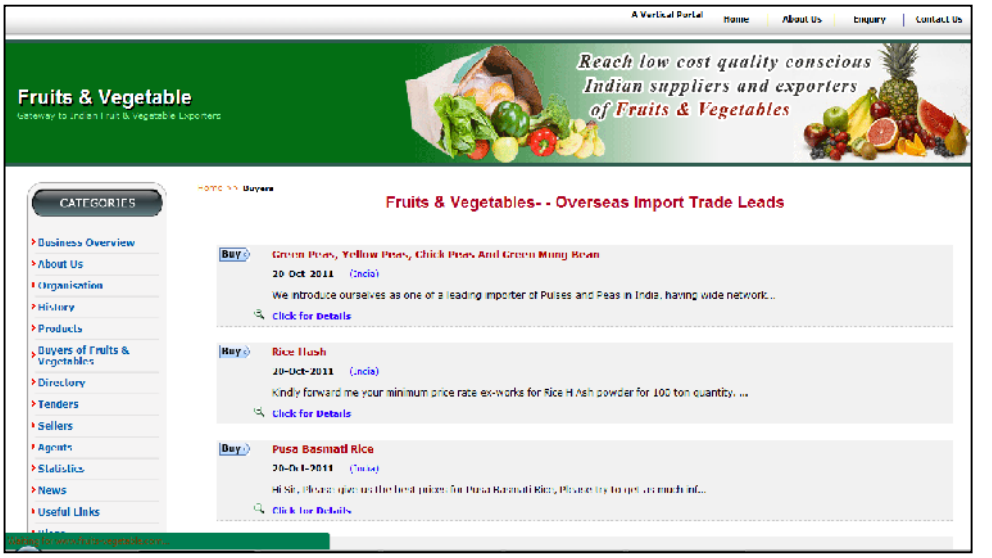


Figure 2.7: Buyers - The overseas import trade leads

If the user want to buy the product, the user can click for details.

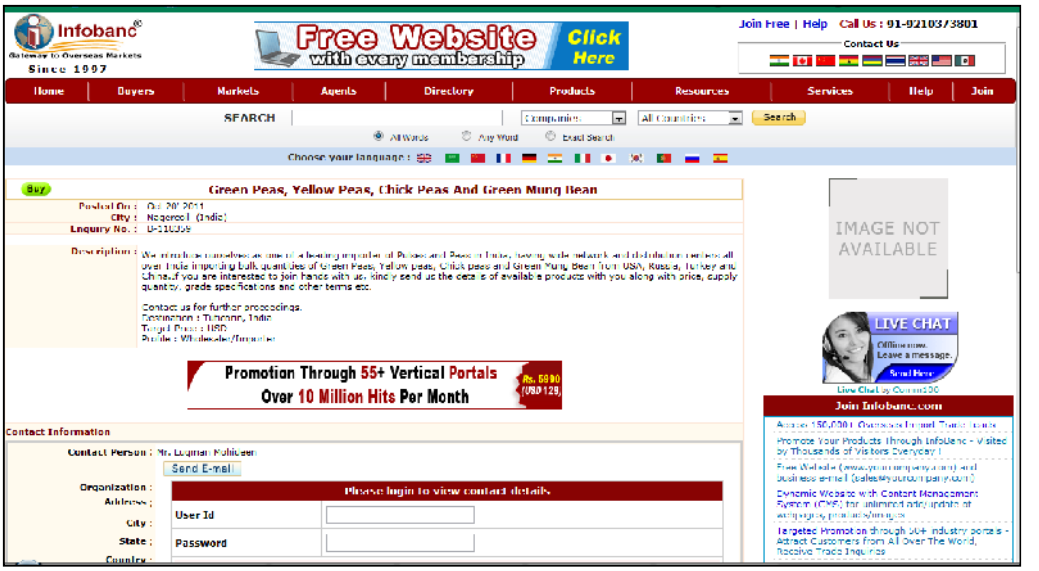


Figure 2.8 : The other website for the buyer.

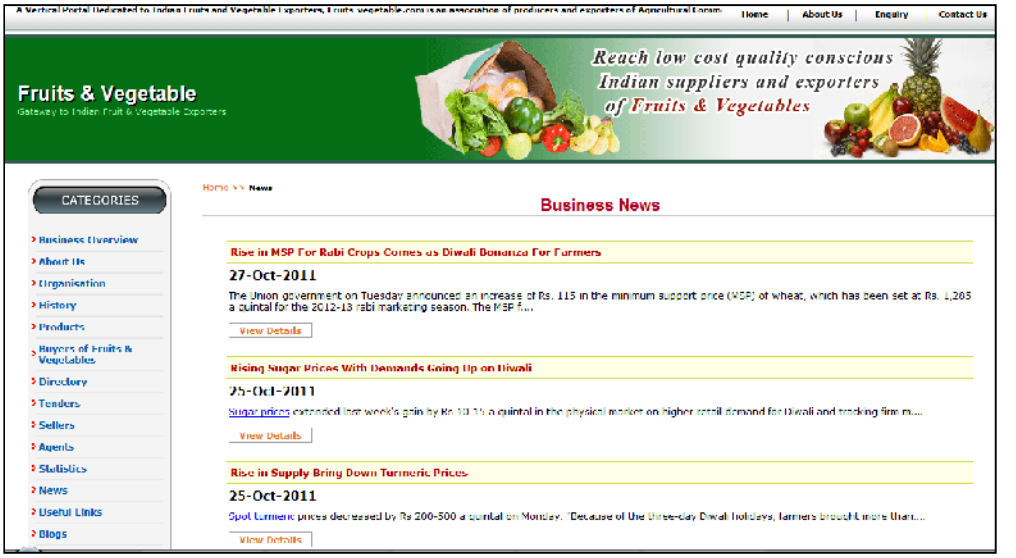


Figure 2.9: Business News